

A conversation with Development Media International on April 24, 2014

Participants

- Roy Head – CEO, Development Media International
- Will Snell – Director of Development, Development Media International
- Cathryn Wood – Public Engagement and Innovation Manager, Development Media International
- Timothy Telleen-Lawton – Research Analyst, GiveWell
- Sean Conley – Research Analyst, GiveWell

Note: This set of notes was compiled by GiveWell and gives an overview of the major points made by Mr. Head, Mr. Snell, and Ms. Wood.

Summary

GiveWell spoke with staff members at Development Media International (DMI) about DMI's randomized controlled trial of its mass media campaigns for promoting health-related behaviors in Burkina Faso and future projects for DMI.

Overview of the randomized controlled trial on child mortality in Burkina Faso

Development Media International (DMI) runs mass media health campaigns. Though these campaigns are costly, DMI's models indicate that the programs will be very cost-effective, costing between \$2 and \$15 per disability-adjusted life year (DALY). If these predictions are supported by DMI's experiments, DMI believes mass media health campaigns may be the most cost-effective way of preventing under-five mortality.

DMI is testing its model by administering a randomized controlled trial (RCT) on the effect of its campaigns on child mortality in Burkina Faso. This is currently the organization's primary project. DMI has 35 staff members in Burkina Faso, 8 in London, and 1 in the Democratic Republic of the Congo (DRC).

DMI has been funded with about \$12 million over five years from the following organizations to support its Burkina Faso RCT:

- Wellcome Trust
- Planet Wheeler Foundation

Other organizations that have funded DMI:

- USAID (via PAHO)
- DFID
- PMNCH
- Mulago Foundation

- Government of Taiwan
- University of the West Indies
- David & Elaine Potter Foundation
- Joseph Rowntree Charitable Trust

Methodology of the Burkina Faso trial

DMI has identified 14 clusters in Burkina Faso, each based around an FM community radio station. Half of these are part of the intervention group, and the other half are part of the control group. Only the intervention group receives DMI's mass media campaigns. DMI did not do any blinding (for example, broadcasting unrelated programs) in the control clusters.

There are two mechanisms that DMI uses to broadcast health messages in intervention zones. One mechanism consists of one-minute radio messages broadcast 10 times a day (a frequency which DMI considers to be the point of saturation). These messages are changed every two weeks. The other mechanism is a two-hour live radio show broadcast every night on all stations, which includes two 15-minute stories in which actors voice various characters. Each story conveys a different health message (e.g., that breastfeeding is important). Including all seven stations, the shows are broadcast for 70 hours per week.

The RCT is a registered clinical trial

(<https://clinicaltrials.gov/ct2/show/NCT01517230?term=simon+cousens&rank=3>)

(ClinicalTrials.gov identifier: NCT01517230).

Data collection in the Burkina Faso trial

The London School of Hygiene and Tropical Medicine (LSHTM) are independently evaluating the RCT. They are administering surveys on health behaviors at the beginning, middle, and end of the trial. The mid-program survey was recently completed. Each survey has a sample size of 5,000, and the data is mostly self-reported. Though there may be some issues in self-reported data, self-reporting is commonly used to collect other public health data, particularly for behavioural measures. The questionnaire is based on the Demographic and Health Surveys (DHS). The final behavioral survey will also include administrative data on metrics such as attendance at health clinics.

The primary goal of the trial in Burkina Faso is to reduce child mortality, so the final survey will focus on this primary outcome. For the endline mortality survey 100,000 mothers will be interviewed and full birth histories obtained to estimate child mortality rates at baseline and endline. This is expected to be completed in late 2015. (A large sample size is needed because mortality is relatively rare.) Though reducing child mortality is difficult and requires many interventions, it is a relatively easy outcome to measure compared with behavioral changes. The survey involves asking mothers about their complete birth and pregnancy histories. Though the data is self-reported, it is less subject to reporting bias than questions about behavior. Some people believe that broadcasting messages on health

behaviors biases surveys because it causes people to give the answers that they think the interviewer wants to hear.

Preliminary data from the Burkina Faso trial

According to DMI's model, a 19% reduction in post-neonatal child mortality in Burkina Faso over the course of the trial would require around a 14% change on average for most key health behaviors. DMI was hoping to see at least a 7% difference between control and treatment groups on the mid-program survey to be approximately on track for the 14% change by the end of the trial. In the mid-program survey, the actual average difference between the control group and the intervention group on the weighted average of 10 key health behaviors (based on difference in differences analysis) was 8.7%. However, it is unknown whether the rate of adoption will continue, increase, or decrease during the second half of the trial.

In some ways, the results have been different from DMI's predictions. There were worse results on breastfeeding than had been predicted but better results on treatment-seeking.

In the case of oral rehydration therapy (ORT), or more liquids, the p-value (0.012) for the difference in difference was significant at the 0.05 level.

Despite some complications in the data (see below), this study is the first cluster RCT to show that mass media can cause behavioral change. The evidence base for this intervention is therefore stronger than for any similar program.

Issues in interpreting midline data from the trial

Improvements in the control group

Health behaviors in control clusters have improved in almost all cases, which to some degree weakens the extent of impact of the intervention, as it suggests there are wider underlying trends of improvement for many behaviours. For example, the rate of breastfeeding in the control group was initially 34% at the beginning of the campaign in early 2012 and increased to 48% in 2013. However, the most recent DHS survey shows that the rate of breastfeeding was only 25% in 2010 and 19% in 2003. It seems implausible that breastfeeding would increase this rapidly from 2010-2013, implying that there may be some reporting bias. Qualitative research from one of our control zones in Kongoussi, estimated exclusive breastfeeding prevalence to be 23%, whereas the midline survey data found this to be 76%. Although different sampling and survey methodology were used for the qualitative and quantitative research, this suggests breastfeeding reporting may be unreliable.

The improvements in the control zones were probably not due to spillover of programming from the intervention zones. DMI tracks who listens to various radio channels, so it would have been aware of spillover. Part of a control zone was affected by spillover, but women interviewed in the affected villages in that zone were removed from the dataset. Though

there was some health broadcasting by other organizations in the control zones, there was nothing on the scale of DMI's efforts.

The control zones were initially very different from the intervention zones in several ways:

- In many of the intervention zones, people need to go to health centers during certain hours to receive antenatal care. In one of the control zones visited by DMI's qualitative research team, they found health workers visit households to provide antenatal care and are better equipped and supervised.
- In the intervention zones, the initial mortality risk for children under five was 136 per 1,000 children. In the control zones, it was 102 per 1,000 children.
- The initial percentage of births that occurred in health centers was 56% in the intervention zones but was 82% in the control zones.
- Within the surveyed villages there are 22 health centers in intervention zones and 41 in control zones.

Burkina Faso is one of the poorest countries in the world, with very low health indicators, so the U.S. government and NGOs provide significant funding to other health programs in the country. DMI is investigating the possibility that improvements in the control zones are due to the work of other organizations. The Bill and Melinda Gates Foundation, for example, is doing work in at least one of the control zones. Though DMI is aware of the projects that are being done in the control zones, it does not know the details of the impact of those programs. DMI's qualitative researchers are currently surveying people in control zones to determine why they have changed their behaviors.

The small sample size of the behavioral survey also could have contributed to the anomalous results in the control zones. For example, the number of women answering the question on breastfeeding was 361 in intervention zones and 291 in control zones.

Additionally, DMI was only able to use 14 clusters, which meant that it was only able to control for one factor in assigning clusters to the intervention group or to the control group. LSHTM chose to control for media penetration, since some clusters have much higher media penetration than others. They evenly distributed the high-penetration clusters between the intervention group and the control group, but this meant that they were unable to control for other factors.

Distances of households from treatment centers

Though the distance of a household from a health center is not the most important factor in health outcomes, access to health care is likely to impact treatment-seeking behaviours. LSHTM have therefore adjusted for distance to a health facility, for all facility-dependent behaviours in the cluster-level analysis they conducted for the midline report. They determined the distances between households and treatment centers using GPS.

Changes in the program based on preliminary data

The primary intervention that DMI is testing is a multi-issue media campaign targeting causes of child mortality. The specific messages that DMI broadcast are weighted according to their predicted impact on child mortality. DMI is changing the weight of broadcasting across its range of messages midway through the program, based on effectiveness data from the first 20 months and on changes in health indicators in Burkina Faso. DMI is focusing more on messages that have been proven to have a greater impact and are predicted to save the most lives. It will also be adjusting its modeling at the end of the trial to reflect the new evidence the RCT will provide. DMI's recommendations at the end of the trial will include information on which messages would be most effective for future child mortality programs.

Oral rehydration salts

Because oral rehydration salts (ORS) initially were not widely available in Burkina Faso, DMI promoted other forms of oral rehydration therapy (ORT), such as providing food and increased fluids to children with diarrhea. ORS became widely available in Burkina Faso during the first phase of the trial, so DMI has shifted its diarrhea treatment messaging to focus more on ORS. In the mid-program survey, there was a 12% greater use of ORS in the intervention group compared to the control group (based on crude difference in difference).

DMI's future projects

Future child mortality programs

DMI is looking to scale up to 10 countries in Africa to run mass media campaigns on child mortality. The main factors in DMI's country selection strategy are need (which is partially related to the level of current activity around child health mass media campaigns) and the predicted number of lives saved according to DMI's mathematical model.

According to DMI's models, five-year campaigns in ten countries would save a total of one million lives over the course of ten years. DMI has so far conducted feasibility studies in five countries and is initially focusing on four countries:

- The Democratic Republic of the Congo (DRC) – estimated 43,200 lives saved annually. (This would be one of the costlier programs with expenses estimated at around \$2 million per year, or \$1 million per year for a campaign covering 6 of DRC's 11 provinces.)
- Mali – estimated 16,400 lives saved annually.
- Mozambique – estimated 14,600 lives saved annually.
- Zambia – estimated 11,200 lives saved annually.

DMI expects to add an additional national program in 2014 and one or two more in 2015. Over time, it will increase the number of programs it launches. DMI's London office has the capacity to run five programs this year, but it does not expect to have enough funding to do this.

DMI is having discussions with potential partners and funders in African countries about supporting campaigns. To raise more money, DMI created Media Million Lives, a fundraising initiative with a separate website (www.mediamillionlives.org).

Future experimentation on child mortality

DMI does not plan to do further child mortality RCTs after the Burkina Faso trial because they would be expensive and would mean that half of the population would not receive the intervention. Additionally, other countries would be less suited than Burkina Faso for a cluster RCT testing a mass media campaign because other countries have less localized media, so it is more likely that the control group would receive the messages broadcast to the intervention group.

For future child mortality programs, DMI plans to use a quasi-experimental evaluation design to measure a wide range of outcomes. This could involve administering a series of surveys to do a time series analysis, creating non-randomized controls, or using propensity score matching. DMI may compare the effectiveness of various messages within a program.

New proposals

DMI is creating proposals for RCTs on the effectiveness of mass media campaigns to reduce tuberculosis (TB) and improve child nutrition. A TB trial would focus on adults, which means that it would be more difficult to measure mortality because adults have lower rates of mortality than children. A TB trial could instead focus on hard health outcomes such as improving TB case detection or treatment rates.

Mozambique would be a good place for an RCT on a TB campaign because of its high rate of TB infection and its media structure that would allow broadcasting to be limited to certain areas. DMI estimates that the TB trial would cost \$1-1.2 million. It expects the program to achieve faster results than the child mortality program because it is simpler: the only necessary behavior change is for people to visit a health provider for testing and use a free drug.

DMI has not selected a country in which to do its RCT on child nutrition. It needs to decide whether to do it in an area of high stunting (an indicator of low food security), where it may be more difficult to have an impact. Interventions to prevent stunting are very challenging. There has not been a complementary feeding education only program that has caused an average growth in children's heights of more than around one centimeter. One program showed that counseling alone could lead to growth of one centimeter. Since a mass media

campaign could not replicate this one-on-one attention, it is unlikely that growth as great as one centimeter could be achieved.

DMI has not estimated the cost of an RCT on a nutritional campaign, but it expects that it would cost approximately the same as a TB trial.

All GiveWell conversations are available at <http://www.givewell.org/conversations>